

SCIENCE ABSTRACTS.

5198
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SECTION A.—PHYSICS.

VOL. XXXV.

1932.

EDITED AND ISSUED BY

THE INSTITUTION OF ELECTRICAL ENGINEERS,

SAVOY PLACE, VICTORIA EMBANKMENT, LONDON, W.C. 2.

IN ASSOCIATION WITH

THE PHYSICAL SOCIETY,

THE AMERICAN PHYSICAL SOCIETY,

THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

AND L'ASSOCIAZIONE ELETTROTECNICA ITALIANA.

LONDON:

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NEW YORK:

SPON & CHAMBERLAIN, 120, LIBERTY STREET.

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ERRATA.

Section A.—PHYSICS.

- Abstract No. 39, line 13; *for* isobars, *read* isobares.
Abstract No. 64, lines 4 and 6; *for* election, *read* electron.
Abstract No. 426, line 2; *for* Shellow, *read* Shelow.
Abstract No. 1453, line 2; *for* R. Bružs, *read* B. Bružs.
Abstract No. 1542, line 1; *for* Hydrometeors, *read* Hydrometeorology.
Abstract No. 2477, line 8; *for* $\frac{\partial V}{\partial t}$ *read* $\frac{\partial V}{\partial t}$.
Abstract No. 2489, line 2; *for* Calorimeter, *read* Microcalorimeter.
Abstract No. 2662, line 5; *for* not, *read* most.
Abstract No. 2779, line 2; *for* R. Yamamura, *read* K. Yamamura.
Abstract No. 2801, line 1; *for* W. H. Hamilton, *read* W. F. Hamilton.
Abstract No. 4024, line 1; *for* Vortices near, *read* Motion near.
Abstract No. 4291, line 16; *for* 3·9 cm. and 28 cm., *read* 3, 9 and 28 cm.
Abstract No. 4647, line 2; *for* R. Wesolowski, *read* K. Wesolawski.

EDITOR.

H. G. SOLOMON, M.I.E.E.

ABSTRACTORS.

- | | |
|---|---|
| <p>G. E. ALLAN, D.Sc.
 H. N. ALLEN, B.Sc.
 R. F. ALLEN, B.Sc.
 R. H. ALLEN, B.Sc.
 C. B. ALLSOPP, M.A., Ph.D.
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 T. BARRATT, D.Sc., A.R.C.S., F.Inst.P.
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 N. DAVY, B.Sc., A.R.C.Sc.
 M. A. EVERSLED, F.R.A.S.
 J. EWLES, M.A.
 L. B. FIRNBERG, B.Sc.(Eng.), A.C.G.I.
 E. E. FOURNIER d'ALBE, D.Sc., F.Inst.P.
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 G. F. FREEMAN, M.Sc.(Eng.).
 A. E. M. GEDDES, M.A., D.Sc.
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 R. H. GRUNDY, Ph.D., M.Eng., A.M.I.Mech.E., A.M.Inst.N.A.
 W. GUTHRIE.
 H. H. HARRISON, M.Eng., M.I.E.E.
 A. HARVEY, B.Sc., Ph.D.
 H. H. HODGSON, M.A., B.Sc., Ph.D.
 L. E. C. HUGHES, Ph.D.
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 R. G. JAKEMAN, D.Sc.
 J. KAYE, B.Sc.
 J. B. C. KERSHAW, F.I.C.
 J. E. KEYSTON, B.Sc., A.Inst.P.</p> | <p>W. N. Y. KING, A.C.G.I., A.M.I.E.E.
 S. A. KNIGHT, B.Sc.(Eng.), A.C.G.I.
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 F. J. WILKINS, M.Sc., Ph.D.
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 E. WILKINSON, B.Eng., Ph.D.
 A. B. WOOD, D.Sc., F.Inst.P.
 W. D. WRIGHT, Ph.D., A.R.C.S., D.I.C.</p> |
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LIST OF JOURNALS AND THEIR ABBREVIATIONS

An asterisk () indicates that the Journals so marked are received only occasionally.*

ABBREVIATION.	FULL TITLE AND ADDRESS.
Acad. Polonaise Sci. et Lettres, Bull.	Bulletin International de l'Academie des Sciences et des Lettres. Gebethner et Wolff, Rynek Gl., Cracovie, Poland.
Acad. Sci. U.P., India, Bull.	Bulletin of the Academy of Sciences of the United Provinces of Agra and Oudh, Allahabad, India.
Accad. d'Italia, Mem.	Memorie della Reale Accademia d'Italia, Rome, Italy.
Accad. Lincei, Atti	Atti della Reale Accademia Nazionale dei Lincei. Dott. Giovanni Bardi, Piazza Madama 19-20, Rome (III), Italy.
Accad. Sci. Torino, Atti.....	Atti della Reale Accademia delle Scienze di Torino. Libreria Fratelli Bocca, Via Carlo Alberto 3, Turin, Italy.
A.C.E.C.	Ateliers de Constructions Électriques de Charleroi. Route de Philippeville, Charleroi, Belgium.
Acoustical Soc. of America, J.	Journal of the Acoustical Society of America. The American Institute of Physics, 11, East 38th Street, New York, U.S.A.
*Acta Physica Polonica	Acta Physica Polonica, Institut de Physique Expérimentale de l'Université, 69, rue Hoza, Warsaw, Poland.
A.E.G. Mitt	A.E.G. Mitteilungen. Das Literarische Büro der AEG. Friedrich-Karl-Ufer 2/4, Berlin, N.W. 40.
A.I.E.E., Trans.	Quarterly Transactions of the American Institute of Electrical Engineers, 33, West 39th Street, New York, U.S.A.
Akad. Wiss. Wien, Ber.	Sitzungsberichte der Akademie der Wissenschaften in Wien. Mathematisch-naturwissenschaftliche Klasse. Universitätsplatz 2, Vienna I.
Alta Frequenza	Alta Frequenza. Associazione Elettrotecnica Italiana, Via San Paolo N.10, Milan (2/2), Italy.
Am. Acad., Proc.	Proceedings of the American Academy of Arts and Sciences. 28, Newbury Street, Boston, Mass., U.S.A.
Am. Chem. Soc., J.....	Journal of the American Chemical Society. Charles L. Parsons, Mills Building, Washington, D.C., U.S.A.
Am. Electrochem. Soc., Trans.	Transactions of the American Electrochemical Society. Columbia University, New York, U.S.A.
Am. Geophys. Union, Trans.	Transactions of the American Geophysical Union, National Research Council, Constitution Avenue and 21st Streets, Washington, D.C., U.S.A.
Am. Illum. Eng. Soc., Trans.	Transactions of the American Illuminating Engineering Society, Mt. Royal & Guilford Aves., Baltimore, Maryland, U.S.A.

ABBREVIATION.	FULL TITLE AND ADDRESS.
*Am. Inst. Mining & Met. Eng., Techn. Publ.	Technical Publications of the American Institute of Mining and Metallurgical Engineers, 29 West 39th Street, New York, U.S.A.
Am. J. Sci.	American Journal of Science. New Haven, Connecticut, U.S.A.
Am. J. of Roentgenology and Ra- dium Therapy	The American Journal of Roentgenology and Radium Therapy. Charles C. Thomas, 220, East Monroe Street, Springfield, Illinois, U.S.A.
Am. Phil. Soc., Proc.....	Proceedings of the American Philosophical Society. 104, South 5th Street, Phila- delphia, Pa., U.S.A.
Ann. d. Physik.	Annalen der Physik. B. v. Ammon. Salo- monstrasse 18b, Leipzig C1, Germany.
*Ann. de l'Office N. des Combustibles liquides	Annales de l'Office National des Combus- tibles liquides.
Ann. de Physique	Annales de Physique. Masson et Cie, Li- braires de l'Académie de Médecine, 120, Boulevard St. Germain, Paris (VI ^e).
Ann. Soc. Sci. de Bruxelles	Annales de la Société Scientifique de Bruxelles. 2, Rue de Manège, Louvain, Belgium.
Annales des P.T.T.	Annales des Postes, Télégraphes et Télé- phones. Librairie de l'Enseignement Tech- nique, 3, Rue Thénard, Paris (5 ^e).
Arch. des Sciences	Archives des Sciences Physiques et Naturelles. Institut de Physique de l'Université, Geneva, Switzerland.
Arch. f. Elektrot.	Archiv für Elektrotechnik. J. Springer, Linkstrasse 23-24, Berlin, W.9.
Arkiv f. Kem. Min .och Geologie, Stockholm.	Arkiv för Kemi, Mineralogi och Geologie, Almqvist and Wiksells Boktryckeri-A.-B., Stockholm, Sweden.
Arkiv f. Mat., Astron., och Fysik, Stockholm	Arkiv för Matematik, Astronomi, och Fysik. Almqvist & Wiksells Boktryckeri-A.-B., Stockholm, and Wheldon and Wesley, Ltd., 2, 3 and 4, Arthur Street, London, W.C.2
A.S.E.A.J.	A.S.E.A. Journal. Allmänna Svenska Elektriska A.B., Westeras, Sweden, and A.S.E.A. Elec- tric Ltd., 5, Chancery Lane, London, W.C.2.
Assoc. Ing. El. Liège, Bull.....	Bulletin de l'Association des Ingénieurs Electriciens sortis de l'Institut Electro- technique Montefiore. 31, Rue Saint Gilles, Liège, Belgium.
Assoc. Suisse Élect., Bull.	Association Suisse des Électriciens Bulletin. Secretariat General de l'A.S.E. et de l'U.C.S., Seefeldstrasse 301, Zürich 8, Switzerland.
Astron. J.	The Astronomical Journal. Dudley Obser- vatory, Albany, New York, U.S.A.
Astrophys. J.	The Astrophysical Journal. The University of Chicago Press, Chicago, Illinois, U.S.A.
Bell System Techn. J.	Bell System Technical Journal. The Ameri- can Telephone and Telegraph Co., 195, Broadway, New York, U.S.A.
Bell Telephone Quarterly	Bell Telephone Quarterly. The American Telephone and Telegraph Company, 195, Broadway, New York, U.S.A.
Brit. J. of Radiology	The British Journal of Radiology. The British Institute of Radiology, 32, Welbeck Street, London, W.1.
Brown Boveri Rev.	The Brown Boveri Review. British Brown Boveri, Ltd., 56, Victoria Street, London, S.W.1.
Bull. Astronomique	Bulletin Astronomique. Gauthier-Villars et Cie, Quai des Grands-Augustins 55, Paris.

LIST OF JOURNALS.

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ABBREVIATION.

FULL TITLE AND ADDRESS.

Bull. géodésique	Bulletin géodésique. Organe de l'Association Internationale de Géodésie. Rue d'Anjou, 78, Paris (8 ^e).
Bull. Oerlikon	Bulletin Oerlikon, Oerlikon, Ltd., Victoria House, Southampton Row, London, W.C.1.
Bureau of Mines, Bull., Economic Papers and Techn. Papers	Publications of the Bureau of Mines. U.S. Department of Commerce, Superintendent of Documents, Government Printing Office, Washington, D.C., U.S.A.
Bureau of Standards, Circ. & Misc. Publ.	Publications of the Bureau of Standards. Superintendent of Documents, Government Printing Office, Washington, D.C., U.S.A.
Bureau of Standards, J. of Research	Bureau of Standards, Journal of Research. Superintendent of Documents, Government Printing Office, Washington, D.C., U.S.A.
Calcutta Math. Soc., Bull.	Bulletin of the Calcutta Mathematical Society. H. P. Banerjee, M.Sc., 53/1, Shambazar Street, Calcutta, India.
Cambridge Phil. Soc., Proc.	Proceedings of the Cambridge Philosophical Society. The Cambridge University Press, Fetter Lane, E.C.4.
Canad. J. of Research	Canadian Journal of Research. National Research Council of Canada, Ottawa, Canada.
Chem. Soc., J.	Journal of the Chemical Society. The Chemical Society, Burlington House, Piccadilly, London, W.1.
Chem. Soc. Japan, Bull.	Bulletin of the Chemical Society of Japan. Faculty of Science, Imperial University of Tokyo, Japan.
Colliery Guardian	The Colliery Guardian. 30 and 31, Furnival Street, Holborn, London, E.C.4.
Com. Naz. Italiano, Geod. e. Geofis., Bull.	Bollettino del Comitato Nazionale Italiano per la Geodesia e la Geofisica. Prof. G. Cassinis, R. Scuola de Ingegneria, Pisa, Italy.
Comptes Rendus	Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences. Gauthier-Villars et Cie, Quai des Grands-Augustins 55, Paris (6 ^e).
Congrès International d'Électricité, Paris, Papers and Communications	Le Congrès International d'Électricité, Paris. M. R. de Valbreuze, 134, Bd. Haussmann, Paris.
*Cornell Univ. Eng. Experiment Sta., Bull.	Bulletin of the Engineering Experiment Station, College of Engineering, Cornell University, Ithaca, New York, U.S.A.
Dept. Sci. & Indust. Research, Publ.	Publications of the Department of Scientific and Industrial Research, 16, Old Queen Street, London, S.W. 1.
Dominion Astrophys. Obs. Victoria, Publ.	Publications of the Dominion Astrophysical Observatory, Victoria. Victoria, B.C., Canada.
Dominion Observat., Ottawa, Publ.	Publications of the Dominion Observatory, Ottawa. Department of the Interior, Ottawa, Canada.
El. Rev.	The Electrical Review. 4, Ludgate Hill, London, E.C.4.
El. Rly., Bus and Tram J.	The Electric Railway, Bus and Tram Journal. Avenue Chambers, Vernon Place, Southampton Row, London, W.C.1.
Elect. Communication	Electrical Communication. International Standard Electric Corporation, 67, Broad Street, New York, U.S.A., and Connaught House, Aldwych, London, W.C. 2.
Elect. Engineering	Electrical Engineering. Journal of the American Institute of Electrical Engineers, 33, West 39th Street, New York, U.S.A.

ABBREVIATION.	FULL TITLE AND ADDRESS.
Elect. J.	The Electric Journal. 530, Fernando Street, Pittsburgh, Pa., U.S.A.
El. Times	The Electrical Times. Sardinia House, Kingsway, London, W.C. 2.
El. World	Electrical World. McGraw-Hill Publishing Co., Inc., 330, West 42nd Street, New York, U.S.A., and Aldwych House, London, W.C.2.
Electrician	The Electrician. Bouverie House, 154, Fleet Street, London, E.C.4.
Electronics.	Electronics. The McGraw-Hill Publishing Co., Inc., 330, West 42nd Street, New York, U.S.A., and Aldwych House, London, W.C.2.
Electrot. Laborat. Tokyo, Japan, Circ.	Circulars of the Electrotechnical Laboratory, Tokyo, Japan. Electrotechnical Laboratory, Ministry of Communications, Tokyo, Japan.
Electrot. Laborat. Tokyo, Japan, Researches	Researches of the Electrotechnical Laboratory, Tokyo, Japan. Electrotechnical Laboratory, Ministry of Communications, Tokyo, Japan.
Elek. Betrieb	R.E.A. der Elektrische Betrieb. Georg Siemens, Kurfürstenstrasse 2, Berlin, W.57.
Elek. im Bergbau	Elektrizität im Bergbau. R. Oldenbourg, Glückstrasse 8, Munich 32, Germany.
E.N.T.	Elektrische Nachrichten-technik. J. Springer, Linkstrasse 23-24, Berlin, W.9.
E.T.Z.	Elektrotechnische Zeitschrift. J. Springer, Linkstrasse 23-24, Berlin, W.9.
E. u. M.	Elektrotechnik und Maschinenbau. Theobaldgasse 12, Wien 6, Austria.
Elettrotecnica	L'Elettrotecnica. Giornale ed Atti dell'Associazione Elettrotecnica Italiana, Via S. Paolo 10, Milan (103), Italy.
Engineer	The Engineer. 28, Essex Street, Strand, London, W.C.2.
Engineering	Engineering. 35 and 36, Bedford Street, Strand, London, W.C.2.
Ergeb. d. exakt. Naturwiss.	Ergebnisse der exakten Naturwissenschaften. Hirschwaldsche Buchhandlung, Unter den Linden 68, Berlin, N.W.7.
*Faculty of Eng., Tokyo, J.	Journal of the Faculty of Engineering, Tokyo Imperial University. Maruzen Co., Ltd., Tori Nichome, Nihonbashiku, Tokyo, Japan.
*Faculty of Sci. & Agric., Taihoku Imp. Univ., Mem.	Memoirs of the Faculty of Science and Agriculture, Taihoku Imperial University, Formosa, Japan.
Faraday Soc., Trans.	Transactions of the Faraday Society. Gurney and Jackson, 33, Paternoster Row, London, E.C.4.
*Forschung. Ing. Wes.	Forschungsheft. Beilage zu "Forschung auf dem Gebiete des Ingenieurwesens." V.D.I. Verlag G.m.b.H., Dorotheenstrasse 40, Berlin, N.W.7.
Frank. Inst., J.	Journal of the Franklin Institute. The Franklin Institute of the State of Pennsylvania, 15, South 7th Street, Philadelphia, Pa., U.S.A.
Gen. El. Rev.	General Electric Review. The General Electric Co., Schenectady, New York, U.S.A., and Crown House, Aldwych, London, W.C.2.
Geofysiske Publ.	Geofysiske Publikasjoner. Direktor Th., Hesselberg, Det Norske Meteorologiske Institutt, Oslo, Norway.

ABBREVIATION.	FULL TITLE AND ADDRESS.
Geolog. Mag.	The Geological Magazine. Dulau & Co., Ltd., 32, Old Bond Street, London, W.1.
Gerlands Beitr. z. Geophys.	Gerlands Beiträge zur Geophysik. Akademische Verlagsgesellschaft m.b.H., Markgrafenstrasse 6, Leipzig, Germany.
Gerlands Beitr. z. Geophys., Angew. Geophys.	Gerlands Beiträge zur Geophysik. Ergänzungshefte für angewandte Geophysik. Akademische Verlagsgesellschaft m.b.H., Markgrafenstrasse 6, Leipzig, Germany.
Göttingen Nachrichten	Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen. Göttingen, Germany.
Harvard Coll. Obs., Ann.	Annals of the Harvard College Observatory. The Observatory, Cambridge, Mass., U.S.A.
Harvard Coll. Obs., Bull.	Bulletin of the Harvard College Observatory. The Observatory, Cambridge, Mass., U.S.A.
Harvard Coll. Obs., Circ.	Circular of the Harvard College Observatory. The Observatory, Cambridge, Mass., U.S.A.
Helv. Phys. Acta	Helvetica Physica Acta. E. Birkhäuser et Cie, Bâle, Switzerland.
*Hiroshima Journ. Sci.	Journal of Science of the Hiroshima University. Hiroshima University, Hiroshima, Japan.
Hochfrequenztechn. u. Elektroakustik (formerly Zeits. f. Hochfrequenztechn.)	Hochfrequenztechnik und Elektroakustik, Akademische Verlagsgesellschaft m.b.H., Markgrafenstrasse 6, Leipzig, Germany.
Hokkaido Imp. Univ., Eng. Mem...	Memoirs of the Faculty of Engineering. Hokkaido Imperial University, Sapporo, Japan.
I.E.E., J.	Journal of the Institution of Electrical Engineers. Savoy Place, Victoria Embankment, London, W.C.2.
I.E.E., Japan, J.	Journal of the Institution of Electrical Engineers of Japan, Denki-Gakkwai, No. 3, 1-Chome, Yûraku-chô, Kôjimachi-ku, Tokyo, Japan.
I.E.E., Students' J.	Students' Quarterly Journal. The Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2.
*Illinois State Acad. Sci., Trans....	Transactions of the Illinois State Academy of Science. Urbana, Illinois, U.S.A.
Illum. Eng., London	The Illuminating Engineer. The Journal of Good Lighting. 32, Victoria Street, London, S.W.1.
Imp. Acad. Tokyo, Proc.	Proceedings of the Imperial Academy of Tokyo, Ueno Park, Tokyo, Japan.
Imp. Marine Obs., Kobe, Japan, Mem.	Memoirs of the Imperial Marine Observatory, Kobe, Japan.
India Meteorolog. Dept., Mem.	Memoirs of the India Meteorological Department, Government of India, Central Publication Branch, Calcutta.
India Meteorolog. Dept., Sci. Notes	Scientific Notes of the India Meteorological Department, Government of India, Central Publication Branch, Calcutta.
*Indian Inst. of Science, J.	Journal of the Indian Institute of Science. The Bangalore Press, Mysore Road, Bangalore City, India.
Indian Journ. Phys.	Indian Journal of Physics and Proceedings of the Indian Association for the Cultivation of Science. 210, Bow-Bazar Street, Calcutta, India.
Indian Phys.-Math., J.	Indian Physico-Mathematical Journal. J. Ghosh, University of Dacca, Bengal, India.
Indust. and Engin. Chem.	Industrial and Engineering Chemistry. The American Chemical Society. Charles L. Parsons, Mills Building, Washington, D.C., U.S.A.

ABBREVIATION.	FULL TITLE AND ADDRESS.
Indust. & Engin. Chem. (Analytical Edition)	Industrial & Engineering Chemistry (Analytical Edition). The American Chemical Society, Charles L. Parsons, Mills Building, Washington, D.C., U.S.A.
Ingegneri	L'Ingegnere. Rivista Tecnica Sindacato Nazionale Fascista Ingegneri, Via Vittorio Veneto 7, Casella Postale 482, Rome 105, Italy.
Inst. Automobile Eng., J.	Journal of the Institution of Automobile Engineers, Watergate House, York Buildings, Adelphi, W.C.2.
Inst. Civ. Eng., Proc.	Proceedings of the Institution of Civil Engineers. Great George Street, Westminster, London, S.W.1.
Inst. Eng. & Shipbuilders, Trans.	Transactions of the Institution of Engineers and Shipbuilders in Scotland. Elmbank Crescent, Glasgow, Scotland.
Inst. Eng., Australia, J.	Journal of the Institution of Engineers, Australia. Science House, Gloucester, and Essex Street, Sydney, New South Wales, Australia.
Inst. Mech. Eng., Proc.	Proceedings of the Institution of Mechanical Engineers. Storey's Gate, St. James's Park, London, S.W.1.
Inst. of Metals, J.	Journal of the Institute of Metals. 36, Victoria Street, London, S.W.1
Inst. Naval Architects, Trans.	Transactions of the Institute of Naval Architects. 2, Adam Street, Adelphi Terrace, London, W.C.2.
Inst. Petroleum Technologists, J.	Journal of the Institution of Petroleum Technologists. Aldine House, Bedford Street, Strand, W.C.2.
Inst. Phys. and Chem. Research, Tokyo, Sci. Papers	Scientific Papers of the Institute of Physical and Chemical Research. Iwanami Shoten, 16, Minamijimbōchō, Kanda-ku, Tokyo, Japan.
Inst. Post Office El. Eng., Papers	The Institution of Post Office Electrical Engineers, Selected Papers. General Post Office, Alder House, London, E.C.1.
I.R.E., Proc.	Proceedings of the Institute of Radio Engineers. 33, West 39th Street, New York, U.S.A.
Iron and Steel Inst., J.	Journal of the Iron and Steel Institute, 28, Victoria Street, London, S.W.1
Japanese Journ. Math.	Japanese Journal of Mathematics. The Secretary, National Research Council, Imperial Academy House, Ueno Park, Tokyo, Japan.
J. Chem. Phys.	Journal of Chemical Physics. The American Institute of Physics, 11, East 38th Street, New York, U.S.A.
J. de Physique et le Radium	Journal de Physique et le Radium. 12, Place de Laborde, Paris (VIII ^e)
J. de Radiologie et d'Électrologie	Journal de Radiologie et d'Électrologie. Masson et Cie, Libraires de l'Académie de Médecine, 120, Boulevard Saint-Germain, Paris.
J. Inst. F.	Journal of the Institute of Fuel. 53, Victoria Street, London, S.W.1.
J. Math. Phys., Mass. Inst. of Technology	Journal of Mathematics and Physics, The Managing Editor, Massachusetts Institute of Technology, Cambridge, Mass., U.S.A.
J.O.S.A.	Journal of the Optical Society of America. The American Institute of Physics, 11, East 38th Street, New York, U.S.A.
J. Phys. Chem.	Journal of Physical Chemistry. Williams & Wilkins Co., Mt. Royal and Guilford Avenues, Baltimore, Maryland, U.S.A.

ABBREVIATION.	FULL TITLE AND ADDRESS.
Journ. Sci. Instruments	Journal of Scientific Instruments. The Cambridge University Press, Fetter Lane, London, E.C.4.
Journ. Télégraph.	Journal Télégraphique. Bureau International de l'Union Télégraphique, Berne, Switzerland.
Junior Inst. Eng., J.	Journal of the Junior Institution of Engineers. 39, Victoria Street, Westminster, S.W.1.
K. Akad. Amsterdam, Proc.	Proceedings of the Koninklijke Akademie van Wetenschappen te Amsterdam. Amsterdam, Holland.
Kolloid Zeits.	Kolloid Zeitschrift. Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany.
Kyoto Coll. Eng., Mem.	Memoirs of the Kyoto Imperial University College of Engineering, Kyoto, Japan.
Kyoto Coll. Sci., Mem.	Memoirs of the College of Science, Kyoto Imperial University, Kyoto, Japan.
Kyushu Univ. Coll. Eng., Mem. ...	Memoirs of the College of Engineering, Kyushu Imperial University, Fukuoka, Japan.
Leeds Philosoph. and Lit. Soc., Proc.	Proceedings of the Leeds Philosophical and Literary Society. Prof. R. Whiddington, The University, Leeds, England.
*Lick Observat., Bull.	Bulletin of the Lick Observatory, University of California, U.S.A.
Manchester Phil. Soc., Mem.	Memoirs and Proceedings of the Manchester Literary and Philosophical Society. 36, George Street, Manchester, England.
Mechanical Engineering.	Mechanical Engineering. The American Society of Mechanical Engineers, 29, West 39th Street, New York, U.S.A.
M.E.E.	Mining Electrical Engineer. Cromwell Buildings, Blackfriars Street, Manchester, England.
Meteorolog. Office, Geophys. Mem. and Prof. Notes	Geophysical Memoirs and Professional Notes of the Meteorological Office. H.M. Stationery Office, Adastral House, Kingsway, London, W.C.2.
Min. Mag.	The Mineralogical Magazine. Humphrey Milford, Oxford University Press, Amen House, Warwick Square, London, E.C.4.
Mines Mag.	Mines Magazine. The Colorado School of Mines, Golden, Colorado, U.S.A.
Monthly Weather Rev.	Monthly Weather Review. Superintendent of Documents, Government Printing Office, Washington, D.C., U.S.A.
M.V. Gazette	Metropolitan-Vickers Gazette. Metropolitan-Vickers Electrical Co., Ltd., Trafford Park, Manchester.
Nat. Acad. Sci., Proc.	Proceedings of the National Academy of Sciences. The Home Secretary, The National Academy of Sciences, Constitution Avenue and 21st Street, Washington, D.C., U.S.A.
National Research Council, Bull. ..	Bulletin of the National Research Council. Publication Office, National Research Council, Constitution Avenue and 21st Street, Washington, D.C., U.S.A.
Nature	Nature. MacMillan & Co., Ltd., St. Martin's Street, London, W.C.2.
Naturwiss.	Naturwissenschaften. Hirschwaldsche Buchhandlung, Unter den Linden 68, Berlin, N.W.7.
N. Cimento	Il Nuovo Cimento. N. Zanichelli, Società Italiana di Fisica, Bologna, Italy.
*N.E. Coast Inst. Eng. & Shipbuilders, Trans.	Transactions of the North-East Coast Institution of Engineers and Shipbuilders. Bolbec Hall, Newcastle-upon-Tyne, England.

ABBREVIATION.	FULL TITLE AND ADDRESS.
Observatory	Observatory. Taylor and Francis, Red Lion Court, Fleet Street, London, E.C.4.
Onde Élec.	L'Onde Électrique. Société des Amis de la T.S.F., 40, Rue de Seine, Paris (VI ^e).
Optical Soc., Trans.	Transactions of the Optical Society. 1, Lowther Gardens, Exhibition Road, South Kensington, London, S.W.7.
Phil. Mag.	The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science. Taylor & Francis, Red Lion Court, London, E.C.4.
Phot. Indust.	Photographische Industrie. Verlag der Union Verlagsgesellschaft Zweigniederlassung, Krausenstrasse 35/36, Berlin, S.W.19.
Phot. J.	The Photographic Journal. The General Editor, The Royal Photographic Society, 35, Russell Square, London, W.C.1.
Physica	Physica. Martinus Nijhoff, Lange Voorhout 9, 'Gravenhage, Holland.
Physics	Physics. The American Institute of Physics, 11, East 38th Street, New York, U.S.A.
Physics in Industry.....	Physics in Industry. The Institute of Physics, 1, Lowther Gardens, Exhibition Road, London, S.W.7.
Phys. Math. Soc. Japan, Proc.	Proceedings of the Physico-Mathematical Society of Japan. Faculty of Science, Tokyo Imperial University, Tokyo, Japan.
Phys. Rev.	The Physical Review. The American Institute of Physics, 11, East 38th Street, New York, U.S.A.
Phys. Soc., Proc.....	Proceedings of the Physical Society. 1, Lowther Gardens, Exhibition Road, London, S.W.7.
Phys. Zeits.	Physikalische Zeitschrift. S. Hirzel, Königsstrasse 2, Leipzig, C.1, Germany.
Phys. Zeits. d. Sowjetunion	Physikalische Zeitschrift der Sowjetunion. Tschaikowskaja 16, Kharkov, U.S.S.R.
P.O.E.E.J.	The Post Office Electrical Engineers' Journal. Electrical Review, Ltd., 4, Ludgate Hill, London, E.C.4.
Pont. Accad. Sci., N. Lincei, Atti. . .	Atti della Pontificia Accademia della Scienze—I Nuovi Lincei. Casina Pio IV. Città del Vaticano, Italy.
Pont. Accad. Sci., N. Lincei, Mem. . .	Memorie della Pontificia Accademia della Scienze—I Nuovi Lincei. Casina Pio IV, Città del Vaticano, Italy.
Power	Power. McGraw-Hill Publishing Co., Inc., 330, West 42nd Street, New York, U.S.A., and Aldwych House, London, W.C.2.
Preuss. Akad. Wiss., Berlin, Abhandlungen	Abhandlungen der Preussischen Akademie der Wissenschaften. 38, Unter den Linden, Berlin.
Preuss. Akad. Wiss. Berlin, Ber.	Sitzungsberichte der Preussischen Akademie der Wissenschaften. 38, Unter den Linden, Berlin.
R. Accad. Navale Nivorno, Pubbl. .	Pubblicazioni dell' Istituto Elettromeccanico delle Comunicazioni della R. Marina, Regia Accademia Navale, Nivorno, Italy.
*Radio Research Board, Australia, Reports.	Reports of the Radio Research Board, Council for Scientific and Industrial Research, 314, Albert Street, East Melbourne, Victoria.
Radio Research, Japan, Reports . . .	Reports of Radio Researches and Works in Japan. The National Research Council of Japan, Imperial Academy House, Ueno Park, Tokyo, Japan.

ABBREVIATION.

FULL TITLE AND ADDRESS.

Radiology.....	Radiology. The Secretary-Treasurer, The Radiological Society, 607, Medical Arts Building, Syracuse, New York, U.S.A.
Rev. d'Acoustique	Revue d'Acoustique. Les Presses Universitaires de France, 49, Boulevard Saint-Michel, Paris (5 ^e).
Rev. de Mét.	Revue de Métallurgie. 5, Cité Pigalle, Paris (IX ^e).
Rev. d'Optique	Revue d'Optique Théorique et Instrumentale. 3 & 5, Boulevard Pasteur, Paris (15 ^e).
Rev. Modern Physics	Reviews of Modern Physics. The American Institute of Physics, 11, East 38th Street, New York, U.S.A.
Rev. Sci. Instruments	Review of Scientific Instruments. The American Institute of Physics, 11, East 38th Street, New York, U.S.A.
R.G.E.	Revue Générale de l'Électricité. 12, Place de Laborde, Paris (VIII ^e).
Rheology	Journal of Rheology. The American Institute of Physics, 11, East 38th Street, New York, U.S.A.
Roy. Astron. Soc. Canada, J.	Journal of the Royal Astronomical Society of Canada. 198, College Street, Toronto, Canada.
Roy. Astron. Soc., Mem.	Memoirs of the Royal Astronomical Society. Burlington House, London, W.1.
Roy. Astron. Soc., M.N.	Monthly Notices of the Royal Astronomical Society. Burlington House, London, W.1.
Roy. Astron. Soc., M.N., Geophys. Supplement	Monthly Notices, Geophysical Supplement of the Royal Astronomical Society, Burlington House, London, W.1.
Roy. Dublin Soc., Proc.....	The Scientific Proceedings of the Royal Dublin Society. Ballsbridge, Dublin, Ireland.
Roy. Inst., Proc.	Proceedings of the Royal Institution of Great Britain. 21, Albemarle Street, London, W.1.
Roy. Irish Acad., Proc.	Proceedings of the Royal Irish Academy. Hodges, Figgis & Co., Dublin, Ireland.
Roy. Meteorolog. Soc., J.	Quarterly Journal of the Royal Meteorological Society. The Royal Meteorological Society, 49, Cromwell Road, South Kensington, S.W.7.
Roy. Meteorolog. Soc., Mem.	Memoirs of the Royal Meteorological Society. The Royal Meteorological Society, 49, Cromwell Road, South Kensington, S.W.7.
Roy. Soc. Arts, J.	Journal of the Royal Society of Arts. G. Bell and Sons, Ltd., York House, Portugal Street, W.C.2.
Roy. Soc. Canada, Trans.	Transactions of the Royal Society of Canada, Ottawa, Canada.
Roy. Soc. Edinburgh, Proc.	Proceedings of the Royal Society of Edinburgh. Robert Grant & Son, 126, Princes Street, Edinburgh, and Williams & Norgate, 38, Gt. Ormond Street, W.C.1.
Roy. Soc. Edinburgh, Trans.	Transactions of the Royal Society of Edinburgh. Robert Grant & Son, 126, Princes Street, Edinburgh, and Williams & Norgate, 38, Gt. Ormond Street, W.C.1.
Roy. Soc., Phil. Trans.	Philosophical Transactions of the Royal Society of London. Harrison & Sons, Ltd., 44-47, St. Martin's Lane, London, W.C.2.
Roy. Soc., Proc.	Proceedings of the Royal Society of London. Harrison & Sons, Ltd., 44-47, St. Martin's Lane, London, W.C.2.

ABBREVIATION.	FULL TITLE AND ADDRESS.
Roy. Soc. Victoria, Proc.....	Proceedings of the Royal Society of Victoria. Ford & Son, Drummond Street, Carlton, Melbourne, Australia.
Roy. Techn. Coll. Glasgow, J.	Journal of the Royal Technical College, Glasgow. Robert Andersen, 142, West Nile Street, Glasgow, C.1, Scotland.
Ryojun Coll. Eng., Mem.....	Memoirs of the Ryojun College of Engineering. The Chairman of the Publication Committee. Ryojun College of Engineering, Port Arthur, South Manchuria.
S. African I.E.E., Trans.	Transactions of the South African Institute of Electrical Engineers. Kelvin House, 100, Fox Street, Johannesburg, S. Africa.
Science	Science. Official Organ of the American Association for the Advancement of Science. The Science Press, Grand Central Terminal, New York, U.S.A.
*Seismological Soc. of America, Bull.	Bulletin of the Seismological Society of America. The Stanford University Press, Stanford, California, U.S.A.
Siemens Zeits.	Siemens Zeitschrift. Siemens-Schuckertwerke Aktiengesellschaft, Verwaltungsgebäude, Berlin-Siemensstadt, Germany.
Soc. Belge Élect., Bull.	Bulletin de la Société Belge des Électriciens. 8, Rue Sabatier, Marcinelle, Belgium.
Soc. Chem. Indust., Japan, J.	Journal of the Society of Chemical Industry, Japan. C/o Department of Applied Chemistry, Faculty of Engineering, Tokyo Imperial University, Japan.
Soc. Franc. Élect., Bull.	Bulletin de la Société Française des Électriciens. 14, Avenue Pierre Larousse, à Malakoff (Seine), France.
Soc. Franc. Phot. et Ciné., Bull.....	Bulletin de la Société Française de Photographie et Cinématographie. Rue de Clichy 51, Paris.
Soc. Glass Technol., J.	Journal of the Society of Glass Technology. Darnall Road, Sheffield 9, England.
Soc. Scien. Fennica.....	Societas Scientiarum Fennica, Helsingfors. Kasärngatan 24, Helsingfors, Finland.
*Solar Phys. Obs., Cambridge, Ann.	Annals of the Solar Physics Observatory, Cambridge. The Cambridge University Press, Fetter Lane, London, E.C.4.
Terr. Mag.	Terrestrial Magnetism and Atmospheric Electricity. The John Hopkins Press, Baltimore, Maryland, U.S.A., and E. G. Allen & Son, Ltd., 14, Grape Street, London, W.C.2.
T.F.T.	Telegraphen- und -Fernsprech-Technik. R. Dietze, Regensburgerstrasse 12A, Berlin, W.50.
Tijds. Nederland Radiogenootschap	Tijdschrift van het Nederlandsch Radiogenootschap, 11A, Elzentlaan, Eindhoven, Holland.
Tohoku Math. J.	The Tohoku Mathematical Journal. Tohoku Imperial University, Sendai, Japan.
Tohoku Univ., Sci. & Technol. Reports	Scientific and Technology Reports of the Tohoku Imperial University. Maruzen Co., Ltd., Sendai, Japan.
Tokyo B.D., Sci. Reports.	Science Reports of the Tokyo Bunrika Daigaku, Section A. Bunrika Daigaku, Koishikawa, Tokyo, and the Maruzen Co., Ltd., 6, Torinichome, Nihombashi-ku, Tokyo, Japan.
Tokyo Univ. Aeronaut. Research Inst., Report	Report of the Aeronautical Research Institute, Tokyo Imperial University, Komaba, Tokyo, Japan.

ABBREVIATIONS.

FULL TITLE AND ADDRESS.

Tokyo Univ. Earthquake Research Inst., Bull.	Bulletin of the Earthquake Research Institute, Tokyo Imperial University, Tokyo, Japan.
*Tsing Hua Univ., Sci. Reports ...	Science Reports of the National Tsing Hua University, Series A. Peiping, China.
Union Géodésique et Géophysique Internationale, Publ.	Publications de l'Union Géodésique et Géophysique Internationale, Série A. L'Association Internationale de Géodésie, Rue d'Anjou, 78, Paris (8 ^e).
Union Obs. S. Africa, Circ.....	Circular of the Union Observatory of South Africa, Johannesburg, S. Africa.
Univ. Durham Phil. Soc., Proc.....	Proceedings of the University of Durham Philosophical Society. E. Patterson, Asst. Librarian, Armstrong College, Newcastle-upon-Tyne, England.
Univ. Nac. La Plata, Estudio Ciencias	Universidad Nacional de La Plata. Contribucion al Estudio de las Ciencias, La Plata, Argentine.
Univ. of Illinois Eng. Exp. Sta., Bull.	Bulletin of the University of Illinois Engineering Experiment Station. University of Illinois, Urbana, Illinois, U.S.A.
V.D.E. Fachberichte	Fachberichte der XXV Jahresversammlung des Verbandes Deutsche-Elektrotechniker in Frankfurt-am-Main. Verband Deutscher Elektrotechniker E.V., Bismarckstrasse 33, Charlottenburg 4, Berlin, Germany.
V.D.I.	Zeitschrift des Vereines Deutscher Ingenieure. V.D.I. Verlag, G.m.b.H., Dorotheenstrasse 40, Berlin, N.W.7.
*Veröff. a.d. Gebiete der Nachrichtentech.	Veröffentlichungen aus dem Gebiete der Nachrichtentechnik. Siemens & Halske AG., Wernerwerk, Berlin-Siemensstadt, Germany.
Washington Acad. Sci., J.	Journal of the Washington Academy of Sciences. Mt. Royal and Guilford Aves., Baltimore, Maryland, U.S.A.
Wireless Engineer	Wireless Engineer and Experimental Wireless. Messrs. Iliffe & Sons, Ltd., Dorset House, Tudor Street, London, E.C.4.
Wireless World (formerly Wireless World & Radio Rev.)	Wireless World. Dorset House, Tudor Street, London, E.C.4.
Wiss. Veröff. a.d. Siemens-Konzern .	Wissenschaftliche Veröffentlichungen aus dem Siemens-Konzerns. The Director, Zentralstelle für wissenschaftlich-techn. Forschungsarbeiten des Siemens-Konzern, Verwaltungsgebäude, Siemensstadt, Berlin, Germany.
World Power	World Power, 62, Lincoln's Inn Fields, London, W.C.2.
Zeits. f. angew. Math. u. Mechanik..	Zeitschrift für angewandte Mathematik und Mechanik. Ingenieurwissenschaftliche Forschungsarbeiten. V.D.I.-Verlag G.m.b.H., Dorotheenstrasse 40, Berlin, N.W.7.
Zeits. f. Astrophysik.....	Zeitschrift für Astrophysik. J. Springer, Linkstrasse 23/24, Berlin, W.9.
Zeits. f. Elektrochem.	Zeitschrift für Elektrochemie und angewandte physikalische Chemie. Verlag Chemie, G.m.b.H., Corneliusstrasse 3, Berlin, W. 35.
Zeits. f. Instrumentenk	Zeitschrift für Instrumentenkunde. J. Springer, Linkstrasse 23/24, Berlin, W.9.
Zeits. f. Krist.	Zeitschrift für Kristallographie. Akademische Verlagsgesellschaft m.b.H., Leipzig, Germany.
Zeits. f. Metallkunde	Zeitschrift für Metallkunde. V.D.I.-Verlag, G.m.b.H., Dorotheenstrasse 40, Berlin, N.W.7.

ABBREVIATION.	FULL TITLE AND ADDRESS.
Zeits. f. phys. Chem.	Zeitschrift für physikalische Chemie. (Abteilungen A and B.) Akademische Verlagsgesellschaft m.b.H., Leipzig, Germany.
Zeits. f. Physik.....	Zeitschrift für Physik. J. Springer, Linkstrasse 23/24, Berlin, W.9.
Zeits. f. techn. Physik	Zeitschrift für technische Physik, B. v. Ammon, Salomonstrasse 18b, Leipzig C1, Germany.
Zeits. f. wiss. Phot.....	Zeitschrift für wissenschaftliche Photographie, Photophysik und Photochemie. J. A. Barth, Salomonstrasse 18b, Leipzig, Germany.